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Alien Invasive Species – is the EU's Strategy Fit for Purpose?

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1. Introduction

The spread of alien species throughout the world is a phenomenon which gathered momentum in colonial times as more trade routes opened up, and has proliferated in today's world of integrated economies and markets.¹ International trade has particularly facilitated the movement of alien species as has our ability to travel far more easily than ever before.² Having arrived in its new environment, a given alien species might lack the capacity to adapt and survive. Others may continue to exist with minimum impact on the ecosystem in question, and may indeed bring benefits to a given ecosystem.³ However, some alien species become 'invasive' in that their introduction or spread presents a serious threat to the native wildlife and biodiversity generally. In Europe alone it is estimated that 10% of the 12000 alien species are invasive,⁴ and it is believed that there has been an increase of 76% in the number of invasive alien species in this region since the 1970s.⁵ The cost of invasions by invasive alien species ('IAS') in Europe has been estimated to be at least €12 million each year, whilst the total cost to date in Australia, Brazil, India, South Africa, United Kingdom and USA is thought to be in the region of US\$ 300 billion.⁶

The Parties to the 1992 Convention on Biological Diversity ('CBD')⁷ have defined 'alien species' as 'a species, subspecies or lower taxon, introduced outside its natural past or present distribution; includes any part, gametes, seeds, eggs, or propagules of such species that might survive and subsequently reproduce'.⁸ The word 'introduction' in this context is defined as 'the movement by human agency, indirect or direct, of an alien species outside of its natural range (past or present). This movement can be either within a country or between countries or areas beyond national jurisdiction'.⁹ An organism which is therefore transported due to human action into an area beyond the species' natural distribution is defined as 'alien' in nature. But what of an *invasive* alien species? This is defined under the CBD regime as 'an alien species whose introduction and/or spread threaten biological diversity'.¹⁰ A key distinction must therefore be made between an 'alien species' and an 'alien *invasive* species'. It is only the latter which threatens biodiversity and requires human intervention to halt its introduction and spread.¹¹

¹ C Shine, N Williams and L Gundling, *A Guide to Designing Legal and Institutional Frameworks on Alien Invasive Species* (IUCN, 2000) 4

² *Id.*

³ Pearce takes the view that certain alien species should be regarded as 'ecological saviours' due to their conservation value; F Pearce, 'No Trespassers?' *The Independent* (London, 14 April 2015) 31. In an interesting shift in perspective from the traditional approach to alien species, the same author has stipulated that he has "become convinced that alien species are part of the solution to nature's current crisis, rather than part of the problem"; F Pearce "Loving the Alien" (2015) 33(7) *Wildlife* 71, 72

⁴ Regulation (EU) 1143/2014 of the European Parliament and of the Council on the prevention and management of the introduction and spread of invasive alien species, OJ 2014 317/35, recital 1

⁵ European Commission, *Invasive Alien Species: a European Response* (European Commission, 2014), 7

⁶ European Environment Agency (EEA), *The Impacts of Invasive Alien Species in Europe* (EEA, 2012), 7

⁷ (1992) 31 ILM 818

⁸ CBD COP 6, Decision VI/23 Alien Species that Threaten Ecosystems, Habitats or Species, Annex, footnote 57. Defining exactly what is meant by 'IAS' has at times proved controversial. For reasons of space this chapter will not address such controversies. However, see S Riley, 'A Weed by any Other Name: Would the Rose Smell as Sweet if it were a Threat to Biodiversity?' 22 (2009-2010) *Georgetown International Environmental Law Review* 157

⁹ CBD COP 6, Decision VI/23 Alien Species that Threaten Ecosystems, Habitats or Species, Annex, footnote 57

¹⁰ *Id.*

¹¹ See letter by Lambertini et al, 'Invasives: A Major Conservation Threat' 333 (6041) *Science* (2011) 404-405.

After habitat destruction and fragmentation, the spread of IAS is believed to be the most pressing cause of biodiversity loss worldwide.¹²

This chapter first seeks to address the means by which invasive alien species have spread globally before discussing the negative impact of such invasions. An introduction to the existing international and regional legal response to IAS will then be given before discussion turns to the recently adopted European Union ('EU') Regulation on the Prevention and Management of the Introduction and Spread of Invasive Alien Species (the 'Regulation').¹³ The latter is the foundation of the EU's new strategy on IAS and entered into force on 1 January 2015. The chapter's key focus is to provide an analysis of the adequacy of the Regulation by primarily addressing the extent to which it operates in line with key international guidance provided by the CBD.

2. The Spread of Invasive Alien Species

Alien species can be introduced by humans either intentionally or unintentionally.

2.1 Intentional Introduction

The numerous reasons as to why humans have seen fit to introduce alien species include the following: to develop commercial forestry; to promote commercial or sport fishing; to facilitate the pet trade; to develop fur farming; to provide a biological control in agriculture; for ornamental reasons; and with a view to breeding specimens in captivity for scientific or commercial reasons.¹⁴ Indeed, many such introductions have proved advantageous to society as a whole. However, some of these alien introductions have proved far from positive in that the species in question has become invasive. The cane toad provides a notorious example of an alien species intentionally introduced for pest control, but which has impacted beyond the target species to become a major predator of a range of other native species.¹⁵ Naturally occurring in Central America and the tropical regions of South America, cane toads (*rhinella marina*) were introduced into North Queensland (Australia) from Hawaii in the mid-1930s as a biological control to reduce the damage to sugar cane occasioned by scarab beetles.¹⁶ This large and resilient toad has now spread rapidly throughout Northeastern Australia. Shine has noted that they 'eat a wide variety of prey, have greater fecundity than native anurans, and develop rapidly in tropical regions'¹⁷ and, as such, 'colonizing cane toads attain very high densities'.¹⁸

Poisonous throughout the entirety of their life cycle, the introduction of the cane toad has certainly had an undesirable effect on Australian biodiversity. For example, cane toads have had a significantly negative impact on certain populations of native species including the bluetongue lizard, the northern death adder, the northern quoll, and some freshwater crocodile populations.¹⁹ It is also believed that a number of bird species in Kakadu Park might be at risk from their presence.²⁰ Competition between this invasive alien species and native frogs is

¹² See, for example, Bern Convention on the Conservation of European Wildlife and Natural Habitats, *European Strategy on Invasive Alien Species* (Council of Europe, 2003), 'Introduction'

¹³ Regulation (EU) 1143/2014 (n 4)

¹⁴ Shine, Williams and Gundling (n 1) 5-6

¹⁵ *Id.*, 5

¹⁶ See <<http://australianmuseum.net.au/Cane-Toad>>

¹⁷ R Shine, 'The Ecological Impact of Invasive Cane Toads in Australia' 85(3) 2010 *The Quarterly Review of Biology* 253, 254

¹⁸ *Id.*

¹⁹ *Id.*, 258-260 and 263

²⁰ *Id.*, 269

thought additionally to have had a negative impact on the latter.²¹ The Australian Government has recognised the ongoing threat posed by the cane toad to Australian wildlife and noted that ‘the range of cane toads has expanded through Australia’s northern landscape and they are now moving westward at an estimated 40 to 60 km per year.’²²

2.2 Unintentional Introduction

Increased trade and tourism has facilitated the unintentional transportation of alien species across the world. Alien species can, for example, attach to the hulls of ships and be transported vast distances before being introduced into a new environment.²³ Border and quarantine requirements have often been needed to ensure that those alien species hidden within consignments of traded products are detected in time.²⁴ Moreover, it is estimated that around 650 million tourists cross international boundaries each year and in doing so can inadvertently introduce infectious agents that are harmful to humans or to agricultural production.²⁵

New infrastructure projects can also facilitate and reinforce the introduction of alien species. The Suez Canal, for example, was opened for traffic in 1869 and has since allowed the migration of more than three hundred tropical species to the Mediterranean ‘causing major changes to composition and structure of native flora and fauna.’²⁶ The inadvertent inclusion of alien species in vessels’ ballast water can additionally lead to the spread of alien marine organisms. Ballast water is commonly utilized to stabilize ships and is eventually discharged, often into a new environment. The Global Ballast Water Management Programme (established by the GEF, UNDP and the IMO) has noted that

the potential for species transfer is compounded by the fact that almost all marine species have planktonic stages in their life-cycle, which may be small enough to pass through a ship’s ballast water intake ports and pumps. This means that species with adult stages that are large or attached to the seabed, may still be transported in ballast water.²⁷

Numerous species of plankton dinoflagellates are believed to have been transported large distances by ballast water.²⁸ Such algae can be absorbed by shellfish, such as oysters and scallops, and then release toxins. The subsequent consumption of contaminated shellfish has led to paralysis and even mortality.²⁹ It is interesting to note that records of such poisonings had until the 1970s been very largely limited to the consumption of shellfish from European, North American and Japanese waters.³⁰ By 1990 the geographical pattern of shellfish poisoning

²¹ *Id.*, 261

²² See <<http://www.environment.gov.au/biodiversity/invasive-species/publications/factsheet-cane-toad-bufo-marinus>>

²³ Shine, Williams and Gundling (n 1), 7

²⁴ *Id.*

²⁵ JA McNeely and others (eds), *A Global Strategy on Invasive Alien Species* (IUCN, 2001), 9 and 12

²⁶ Shine, Williams and Gundling (n 1), 7

²⁷ Global Ballast Water Management Programme (GBWMP), *Stopping the Ballast Water Stowaways!* (GBWMP, 2001), 2. Note also the 2004 International Convention for the Control and Management of Ship’s Ballast Water and Sediments (available at <<http://www.imo.org/>>- not in force). On the latter see KN Scott ‘Defending the world below the brine: managing alien invasive species under the 2004 Ballast Water Convention – a New Zealand Perspective’ (2008) 14(4) *Journal of International Maritime Law* 307, and J Firestone and JJ Corbett ‘Coastal and port environments: international legal and policy responses to reduce ballast water introductions of potentially invasive species’ (2005) 36(3) *Ocean Development and International Law* 291.

²⁸ GBWMP, *id.*, 3

²⁹ *Id.*

³⁰ G Hallegraeff, ‘Transport of toxic dinoflagellates via ships’ ballast water: bioeconomic risk assessment and efficacy of possible ballast water management strategies’ (1998) 168 *Marine Ecology Progress Series* 297

had not only spread further afield in the Northern Hemisphere (to include India, Thailand and the Philippines), but also throughout the Southern Hemisphere (such as Australia, South Africa, and New Zealand).³¹ It is thought that the transportation of dinoflagellates within ballast water may well have been the reason for the increased geographical spread of such incidents.³²

3. The Impact of Invasive Alien Species

The spread of invasive alien species can negatively impact upon biodiversity, ecosystem services, human health and economic activities.³³ Some examples will serve to provide informative illustrations.

3.1 Biodiversity

Adverse impact occasioned by IAS can take the form of competition to native species or the predation of such species, the transmission of disease or harm to native organisms, and the hybridisation of alien invasive species and native species.³⁴ Of the 395 species critically in danger of extinction in Europe in 2011, 110 were at risk due to the impact of invasive alien species.³⁵ The American mink (*neovison vison*) provides an example of an alien invasive species which out-competes a native species, the threatened European mink.³⁶ Originally introduced into Europe by fur farmers, the American mink has also proved to be a major predator of European water voles, and a number of birds that nest on the ground such as the common tern and the black-headed gull.³⁷

A further example of an IAS threatening biodiversity is afforded by the Chytrid fungus (*batrachochytrium dendrobatidis*) which has transmitted a lethal disease known as chytridiomycosis to approximately 500 amphibians in around 40 countries.³⁸ The disease reduces the ability of amphibians to respire through their skins resulting in heart attack, and also contributes to the thickening of their skins which can lead to suffocation. A final illustration is provided by the American Ruddy duck (*oxyura jamaicensis*) which was brought by wildfowl collectors to the UK in the 1940s. Either released from captivity or having otherwise escaped, the Ruddy duck has threatened the existence of the closely related White-headed duck (*oxyura leucocephala*) through hybridisation in the UK and continental Europe.³⁹

3.2 Ecosystem services

The contribution of ecosystems to human interests can be significantly affected by the introduction and spread of IAS. They can, for example, modify the quality of soil or prove to be a hindrance to crop pollination. The Spanish slug (*arion vulgaris*), which finds food not only in vegetable gardens but also in agricultural fields growing maize, rape and sunflowers,⁴⁰ is a good example. It is believed that these slugs were unintentionally introduced into much of Europe by contaminated soil and also as stowaways in gardening equipment.⁴¹ Each slug can produce 400 eggs and the species is thought to have been responsible for a 50% reduction in yield in Norwegian strawberry fields.⁴² The pontic rhododendron (*rhododendron ponticum*)

³¹ *Id.*

³² *Id.*

³³ European Environment Agency (n 6), 11

³⁴ *Id.*, 10

³⁵ *Id.*, 8

³⁶ *Id.*, 19

³⁷ *Id.*

³⁸ *Id.*, 35

³⁹ *Id.*, 40

⁴⁰ *Id.*, 58

⁴¹ *Id.*, 60

⁴² *Id.*, 58

also provides an illustration of the negative impact of a species on ecosystem services in that it shades out plants that grow beneath it, and its leaves host poisonous chemicals which reduce the ability of vegetation around the plant to survive.⁴³ Introduced in the UK around 250 years ago as an ornamental plant, it also acts as a host for the Sudden Oak Death disease thereby impacting on woodland ecosystems as well as timber production.⁴⁴

3.3 Human health

Invasive alien species can also have a negative effect on human health. For example, the common ragweed (*ambrosia artemisiifolia*), which is native to North America, has spread throughout Europe in the last 25 years having been introduced as a contaminant in agricultural products and construction materials.⁴⁵ Its pollen is known to induce hay fever and rhinoconjunctivitis, and the plant itself contains oils that act as a skin irritant.⁴⁶ Additionally, the giant hogweed (*heracleum mantegazzianum*) negatively impacts not only on native plants by reducing the amount of light they receive, but also on human health by causing a burning effect on contact with skin potentially causing serious skin lesions.⁴⁷

3.4 Economic activities

The coypu (*myocastor coypus*) was introduced to various parts of the world from South America during the course of the last century, and has subsequently escaped from fur farms. The rodent is known for its burrowing activities which have had a major impact on man-made infrastructures such as dykes, levees and riverbanks.⁴⁸ In the period 1995-2000 the rodent damaged riverbanks in Italy at a cost of more than EUR 10 million even though an eradication programme had removed more than 200,000 from the environment.⁴⁹ Moreover, rose-ringed parakeets (*psittacula krameri*), which have often escaped from aviaries, are known to impact on agricultural activities in India and Pakistan by eating cereals, pulses and oil seeds. They have also damaged plantations in Australia by stripping bark thereby causing the death of affected trees.⁵⁰ A final example is provided by the Japanese Knotweed (*fallopia japonica*) which can damage buildings and negatively impact on biodiversity. Found to be present across 10 acres of the London Olympic games site, it was finally eradicated but only at a cost of £70 million.⁵¹

4. The Developing International and Regional Legal Response

⁴³ *Id.*, 55

⁴⁴ *Id.*, 56

⁴⁵ *Id.*, 80

⁴⁶ *Id.*

⁴⁷ *Id.*, 82

⁴⁸ *Id.*, 84

⁴⁹ *Id.*

⁵⁰ *Id.*, 100

⁵¹ H Wallop, 'Japanese Knotweed: How Do We Tackle This Scourge?' *The Telegraph* (London, 1 April 2014) available at <<http://www.telegraph.co.uk/finance/property/10737159/Japanese-knotweed-How-do-we-tackle-this-scourge.html>>

A large number of international treaties now address the spread of alien invasive species,⁵² as have numerous international guidelines and codes of conduct.⁵³ Particularly significant bearing in mind its global importance is the CBD, Article 8(h) of which places an obligation on Parties to ‘prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats and species.’ The EU itself and all its 28 Member States are party to the CBD and are therefore legally bound by this provision.⁵⁴ Providing ‘a comprehensive, global approach to the protection of Earth’s biodiversity previously lacking in international law’,⁵⁵ the CBD regime regards IAS as a cross-cutting issue relevant to the entirety of the CBD’s work. The tenth meeting of the CBD’s Conference of the Parties in 2010 adopted an updated Strategic Plan for Biodiversity for the period 2011-2020. The plan includes the ‘Aichi Biodiversity Targets’ which incorporates a goal that ‘by 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.’⁵⁶ But how might this ambitious objective be achieved? Key internationally-respected ‘soft law’ guidance has been provided under the auspices of the CBD in the form of fifteen ‘Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats or Species’ (hereinafter ‘CBD Guiding Principles’). The latter were adopted at the

⁵² For a brief introduction to some of these regimes see <www.cbd.int/invasive/done.shtml>. See also Shine, Williams and Gundling (n 1), Appendix I. Examples of international regimes which address IAS include the following: the 1994 Agreement on the Application of Sanitary and Phytosanitary Measures (available at https://www.wto.org/english/docs_e/legal_e/15sps_01_e.htm) which applies to ‘additives, contaminants, toxins and disease-carrying organisms in food, beverages and feedstuffs’ many of which are IAS; the 1979 Bonn Convention on Migratory Species (1980) 19 ILM 15, Article III(4)c of which notes that Parties that are range states of Appendix I listed migratory species ‘shall endeavour ... to prevent, reduce or control factors that are endangering or are likely to endanger the species, including strictly controlling the introduction of, or controlling or eliminating, already introduced exotic species’; the 2004 International Convention for the Control and Management of Ship’s Ballast Water and Sediments (available at <<http://www.imo.org/>>- not in force) under which Parties ‘undertake to give full and complete effect to the provisions of this Convention and the Annex thereto in order to prevent, minimize and ultimately eliminate the transfer of Harmful Aquatic Organisms and Pathogens through the control and management of ships’ Ballast Water and Sediments’ (Article 2(1)); the 1982 UN Convention on the Law of the Sea (1982) 21 ILM 1261 which places Parties under an obligation to ‘take all measures necessary to prevent, reduce and control pollution of the marine environment resulting from ... the intentional or accidental introduction of species, alien or new, to a particular part of the marine environment, which may cause significant and harmful changes thereto’ (Article 196(1)); the 1971 Convention on Wetlands of Strategic Importance (1972) 11 ILM 963 under which Parties have adopted a 2009-15 Strategic Plan which encourages Parties to ‘develop a national inventory of invasive alien species that currently and/or potentially impact the ecological character of wetlands, especially Ramsar sites... [and to] develop guidance and promote procedures and actions to prevent, control or eradicate such species in wetland systems’ (Strategy 1.9); the 2000 Cartagena Protocol on Biosafety (2000) 39 ILM 1027 which stipulates that the ‘development, handling, transport, use, transfer and release of any living modified organisms are undertaken in a manner that prevents or reduces the risks to biological diversity, taking into account risks to humans’ (Article 2); and the 1997 Convention on the Law of the Non-navigational uses of International Watercourses (1997) 36 ILM 719 which notes that States ‘shall take all measures necessary to prevent the introduction of species, alien or new, into an international watercourse which may have effects detrimental to the ecosystem of the watercourse resulting in significant harm to other watercourse states’ (Article 22).

⁵³ See, for example, the 1995 FAO Code of Conduct for Responsible Fisheries which notes that ‘States should, in order to minimize risks of disease transfer and other adverse effects on wild and cultured stocks, encourage adoption of appropriate practices in the genetic improvement of broodstocks, the introduction of non-native species, and in the production, sale and transport of eggs, larvae or fry, broodstock or other live materials’ (para. 9.3.3). Also see the 2005 International Council for the Exploration of the Seas’ Code of Practice on the Introductions and Transfers of Marine Organisms [available at <www.ices.dk/publications/Documents/Miscellaneous%20pubs/ICES%20Code%20of%20Practice.pdf>].

⁵⁴ In relation to EU membership see Council Decision 93/626/EEC concerning the conclusion of the Convention on Biological Diversity, OJ 1993 L309/1

⁵⁵ MJ Bowman, PGG Davies and C Redgwell, *Lyster’s International Wildlife Law* (2nd Ed., CUP, 2010), 594

⁵⁶ CBD Decision X2, Aichi target 9

sixth Conference of the Parties in 2002,⁵⁷ and are designed to provide a structure within which governments and organizations can develop effective strategies to reduce the spread and impact of IAS. The fifteen non-binding principles are therefore essential goals to be achieved and have set an important benchmark against which relevant strategies can be assessed.

Action within regional legal regimes has also been endorsed and promoted.⁵⁸ Activity under the 1979 Convention on the Conservation of European Wildlife and Natural Habitats (the ‘Bern Convention’) has arguably proved to be the most significant in this regard. Article 11(2)b of the Bern Convention obliges Parties to ‘strictly control the introduction of non-native species’ and the EU and its Member States are bound by this provision.⁵⁹ An IAS Experts’ Group has been established by the Parties to the treaty and first met in 1993. This group played an essential part in the preparation of a key IAS-related recommendation which was adopted in 2003 by the Standing Committee; the ‘European Strategy on Invasive Alien Species’ is designed to foster greater cooperation in this area as well as the adoption of effective national policies and legislation.⁶⁰ This strategy was, of course, introduced one year after the adoption of the CBD’s Guiding Principles and sought to facilitate the latter’s implementation.

The Bern Convention’s IAS Expert Group has also engaged in other IAS-related activity including analysis of national measures taken by Parties, the drafting of codes of conduct on IAS as well as guidelines on eradication, and also the identification of those sensitive habitats (including islands) particularly susceptible to invasion. Moreover, the Bern Convention’s Standing Committee has deliberated over the spread of a variety of IAS within its ‘case file’

monitoring system and has subsequently adopted specific recommendations relating to the protection of particular species,⁶¹ as well as those relating to the eradication or control of IAS.⁶² Standing Committee recommendations have additionally endorsed a range of relevant technical codes of conduct,⁶³ and numerous IAS-related reports have been produced.⁶⁴

5. The Regulation

⁵⁷ See CBD Decision VI/23, Annex

⁵⁸ See, for example, the 1995 Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (Barcelona Convention); Article 6(d) notes that Parties ‘shall take the protection measures required, in particular: the regulation of the introduction of any species not indigenous to the specially protected area in question’.

⁵⁹ In relation to EU membership see Council Decision 82/72/EEC concerning the conclusion of the Convention on the Conservation of European Wildlife and Natural Habitats, OJ 1982 L38/1

⁶⁰ Recommendation No. 99 (2003) on the European Strategy on Invasive Alien Species

⁶¹ See, for example, Recommendation No. 78 (1999) on the conservation of the Red squirrel in Italy; Recommendation No. 18 (1989) on the protection of indigenous crayfish in Europe; Recommendation No. 61 (1997) on the conservation of the White-headed Duck; Recommendation No. 114 (2005) on the control of the Grey squirrel and other alien squirrels in Europe.

⁶² See, for example, Recommendation No. 124 on progress in the eradication of the Ruddy Duck. Other Standing Committee recommendations related to the eradication or control of IAS include Recommendation No. 126 on the eradication on some invasive alien plant species and Recommendation No.91 (2002) on Invasive Alien Species that threatened biological diversity in Islands and geographically and evolutionarily isolated ecosystems.

⁶³ See, for example, Recommendation No. 154 (2011) on the European Code of Conduct on Pets and Invasive Alien Species, Recommendation No. 160 (2012) on the European Code of Conduct for Botanical Gardens on Invasive Alien Species, and Recommendation No. 161 (2012) on the European Code of Conduct for Zoological Gardens and Aquaria on Invasive Alien Species.

⁶⁴ See, for example, C. de Klemm, ‘Introduction of non-native organisms into the Natural environment’ Nature and Environment series no. 73 (1996)

At the EU level, whilst the control of some IAS had been addressed or was capable of being addressed under existing binding measures,⁶⁵ a comprehensive system specifically designed to regulate IAS was lacking. Moreover, national responses by EU Member States to the spread of IAS had been criticised; a 2006 review of frameworks in 27 countries (now all EU Member States) came to the conclusion that ‘although most Member States have some regulations in place relating to IAS... the fragmented measures in place are unlikely to make a substantial contribution to lowering the risks posed by IAS to European ecosystems.’⁶⁶ A 2011 study further concluded that ‘some Member States are more advanced than others in their initiatives to tackle IAS, and approaches to the IAS issue differ.’⁶⁷ There was additionally evidence that action taken by Member States was often simply reactive to IAS detection rather than preventive.⁶⁸ A more comprehensive and co-ordinated cross-border response was therefore required and the EU’s 2020 Biodiversity Strategy adopted in May 2011 noted that the European Commission (‘Commission’) would ‘fill policy gaps in combating IAS by developing a dedicated legislative instrument by 2012.’⁶⁹ In fact the Commission’s proposal saw the light of day in September 2013,⁷⁰ and the Regulation was finally adopted on 22nd October 2014.

The EU Regulation’s definitions of ‘alien species’, ‘introduction’, and ‘invasive alien species’ are broadly in line with those used by the CBD. However, particular types of IAS are in fact excluded from the remit of the measure due to the fact that other EU measures have already introduced applicable control regimes.⁷¹ Moreover, the Regulation makes an exception - similar to that now endorsed under the Bern Convention - in that it excludes species moving outside their natural range in response to ‘changing ecological conditions and climate change.’⁷² This particular exception seeks to clarify a concern that such species might

⁶⁵ For example, under Article 22(b) of the Habitats Directive (Directive 92/43/EEC, OJ 1992 L206/7) Member States shall ‘ensure that the deliberate introduction into the wild of any species which is not native to their territory is regulated so as not to prejudice natural habitats within their natural range or the wild native fauna and flora and, if they consider it necessary, prohibit such introduction.’ Moreover, Article 11 of the Birds Directive (Directive 2009/147/EC, OJ 2009 L20/7) stipulates that ‘Member States shall see that any introduction of species of bird which do not occur naturally in the wild state in the European territory of the Member States does not prejudice the local flora and fauna.’ Some IAS, such as the American Ruddy duck and the painted turtle, are regulated by the CITES Regulation (Regulation 338/97, OJ 1997 L61/1). Note also Council Directive 2000/29 on protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community (OJ 2000 L169/1), those measures designed to prevent the introduction of animal diseases (such as Council Directive 97/78/EC laying down the principles governing the organisation of veterinary checks on products entering the Community from third countries (OJ 1998 L24/9)), and Regulation 708/2007 on the use of alien and locally absent species in aquaculture (OJ 2007 L168/1).

⁶⁶ C Miller, M Kettunen and C Shine, *Some Options for EU Action on Invasive Alien Species: Final Report for the European Commission* (Institute for European Environmental Policy, 2006), 50

⁶⁷ European Commission, *A Comparative Assessment of Existing Policies on Invasive Species in the EU Member States and in selected OECD countries* (European Commission, 2011), 21

⁶⁸ European Commission, *Proposal for a Regulation on the prevention and management of the introduction and spread of invasive alien species*, COM(2013) 620 final, 2

⁶⁹ European Commission, ‘Our Life Insurance, Our Natural Capital: an EU Biodiversity Strategy to 2020’ COM (2011) 244, Action 16.

⁷⁰ European Commission (n 68)

⁷¹ Article 2. IAS excluded from the Regulation include genetically modified organisms regulated under Directive 2001/18/EC, those harmful pests to plants regulated by Directive 2000/29/EC, species used in aquaculture and controlled by Regulation 708/2007, and micro-organisms used in plant protection products and biocidal products duly authorised or being assessed under Regulation 1107/2009 and Regulation 528/2012 respectively.

⁷² Article 2(a). Recommendation No.142 (2009) of the Bern Convention’s Standing Committee interpreting the CBD’s definition of IAS had taken into account climate change in noting concern that ‘native species moving to neighbouring areas may be considered alien due to the fact that climate change is the result of human action and

otherwise be regarded as invasive in nature having indeed moved as a consequence of human action into a new habitat outside their natural range - the climate change phenomenon is, of course, in part the consequence of human activity. This exclusion of such species from regulation can be justified by the fact that such species have no alternative but to move from their original habitats due to climatic changes. In effect, the species in question may have nowhere else to go, whilst, by contrast, the IAS subject to the Regulation have no such difficulties surviving within their own original natural range.

The Regulation envisages the establishment of a list ('the List') which will note those IAS for which concerted action at the EU level is required. The List is to be updated over time by either adding to it or by removing certain species that no longer fulfil the Regulation's criteria for listing. Species will be listed, and hence become 'IAS of Union Concern', if they *inter alia* are likely to have significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy. When adopting the List or adding to it, the Commission will apply the applicable criteria for listing 'with due consideration to implementation costs for Member States, the cost of inaction, the cost-effectiveness and the socio-economic aspects.'⁷³ A scientific forum will provide the Commission with advice on scientific questions particularly those relating to the listing process and the application of any emergency measures.⁷⁴

An IAS is to be listed only following a risk assessment which will provide an analysis of the risks involved with the introduction of the species in question. This assessment is to be carried out in accordance with common criteria, thereby ensuring a uniformity of approach which was generally lacking across the Member States prior to the Regulation. In line with the principle of subsidiarity, the risk assessment must *inter alia* demonstrate that 'concerted action at Union level is required to prevent their introduction, establishment or spread'.⁷⁵ A committee of experts will assist the Commission by evaluating the risk assessments.⁷⁶

If listed, the IAS in question becomes subject to an import restriction in that the species cannot be intentionally brought into the EU.⁷⁷ Other restrictions include the fact that the listed species cannot be intentionally kept, bred, or transported to, from or within the EU.⁷⁸ Neither can the listed species be placed on the market, allowed to reproduce, grow or be cultivated or released into the environment.⁷⁹ Additionally, Member States must take steps to prevent the unintentional introduction of listed species.⁸⁰ The Regulation also *inter alia* establishes a surveillance system to detect IAS,⁸¹ allows emergency action to be taken in specific circumstances, and places obligations on Member States to introduce appropriate preventive, eradication and management measures.⁸²

that such species may be unnecessarily controlled' and recommended that the term 'alien species' be interpreted as not including native species naturally extending their range in response to climate change'.

⁷³ Article 4(6). The List will be adopted by means of an implementing act. The draft List is to be examined by a committee composed of representatives of Member States; *see* Article 27. The List will be adopted only if the committee delivers a positive opinion on the draft List in accordance with the examination procedure noted in Article 5 of Regulation 182/2011 (OJ 2011 L55/13).

⁷⁴ Article 28

⁷⁵ Article 4(3)d

⁷⁶ Article 27

⁷⁷ Article 7(1)a

⁷⁸ Article 7(1)b-d

⁷⁹ Article 7(1)e-h

⁸⁰ Article 7(2)

⁸¹ Article 14

⁸² Articles 17 and 19

6. Analysing the Regulation in the light of CBD Guiding Principles

6.1 Precautionary approach - Guiding Principle 1

The first CBD Guiding Principle notes that:

[g]iven the unpredictability of the pathways and impacts on biological diversity of invasive alien species, efforts to identify and prevent unintentional introductions as well as decisions concerning intentional introductions should be based on the precautionary approach, in particular with reference to risk analysis.

Furthermore, the precautionary approach is defined as ‘that set forth in principle 15 of the 1992 Rio Declaration⁸³ ... and in the preamble of the [CBD]’.⁸⁴

Additionally, a precautionary approach should be applied in giving consideration to ‘eradication, containment and control measures in relation to alien species that have become established. Lack of scientific certainty about the various implications of an invasion should not be used as a reason for postponing or failing to take appropriate eradication, containment and control measures.’⁸⁵ In similar vein, Parties to the Bern Convention have acknowledged that the:

potential impact of a new alien species can only be predicted with a high degree of uncertainty. Unknown variables include the likelihood that an organism will survive transport to, establish and spread in a given location and the possible time lag before an introduced species shows invasive characteristics. For these reasons, precaution is particularly relevant to alien species issues. Precaution with regard to IAS has been described as ‘guilty until proven innocent’.⁸⁶

In effect, the CBD’s first Guiding Principle indicates that the identification and prevention of unintentional introductions, decisions concerning intentional introductions and consideration of mitigation measures should be based on the precautionary approach, an approach also expressly endorsed by the Bern Convention’s ‘European Strategy on Invasive Alien Species’.⁸⁷

Express reference to the need for such a precautionary approach regarding invasive alien species in the Regulation is, however, limited to one instance in its operative provisions and another in the measure’s preambular recitals. In relation to the former, Article 8(1) allows some restrictions placed on intentionally introduced IAS of Union Concern to be lifted to carry out research or *ex situ* conservation pursuant to a permit issued by a Member State. Moreover, where the use of products obtained from IAS of Union Concern ‘is unavoidable to advance human health’ a permit issued by a Member State can also allow for the scientific production and subsequent medicinal use of such products. In relation to the possible withdrawal of such a permit, Article 8(5) then proceeds to note that Member States

‘shall empower their relevant competent authority to withdraw the permit at any point in time, temporarily or permanently, if unforeseen events with an adverse

⁸³ Principle 15 of the Rio Declaration notes that ‘[w]here there are threats of serious or irreversible damage, lack of full scientific evidence shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.’

⁸⁴ The preamble to the CBD notes ‘that where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.’

⁸⁵ The CBD Guiding Principle 12 further notes that ‘mitigation measures should take place in the earliest possible stage of invasion, on the basis of the precautionary approach.’

⁸⁶ Bern Convention, Contribution to the 6th meeting of the Subsidiary Body on Scientific, Technical and Technological Advice of the CBD (Montreal, 12-14 March 2001), 8 [document T-PVS (2001) 12 revised]

⁸⁷ Bern Convention (n 12), 3.4

impact on biodiversity or related ecosystem services occur. Any withdrawal of a permit shall be justified on scientific grounds and, *where scientific information is as yet insufficient, on the grounds of the precautionary principle* and having due regard to national administrative rules' [emphasis added].

This, therefore, is a very limited circumstance in which the text of the Regulation expressly provides for a precautionary approach to be taken and would in itself fall a long way short of complying with the CBD guidance.

However, the Regulation's recitals (rather than text) do make reference to the precautionary principle in relation to the need for emergency measures in certain circumstances noting that 'Union level emergency measures would equip the Union with a mechanism to act swiftly in case of presence or imminent danger of a new invasive species in accordance with the precautionary principle'.⁸⁸ As such, under Article 10(4) of the Regulation the Commission enjoys the ability to adopt emergency measures for the Union as a whole when it receives notification from a Member State or has other evidence of the presence or imminent introduction of an IAS not as yet included on the list of IAS of Union Concern, but which is deemed likely by the Member State concerned and the Commission to meet the criteria for listing '*on the basis of preliminary scientific evidence*'. The notifying Member State can also take emergency measures in such circumstances which must be repealed or amended if the Commission adopts EU-wide emergency measures.⁸⁹ Conclusive scientific evidence is not therefore required to introduce emergency measures and the latter could as a result potentially be introduced in accordance with a precautionary approach in these limited circumstances relating to an IAS not as yet on the List. However, emergency measures cannot last indefinitely. The provisions of Article 10(3) oblige the Member State in question to carry out a risk assessment within two years of the introduction of its emergency measures, and then place the onus on the Commission to determine whether or not the species is to be formally listed taking into account the results of the assessment. If it is not subsequently included in the List, emergency measures would be withdrawn.

The decision to list or not to list a given species is the critical element of the regime established by the Regulation – only if the species is listed will the full general restrictions and control measures established by the Regulation apply. The crucial question must therefore be asked as to whether the criteria to be applied in the listing process are in line with the precautionary approach advocated by CBD guidance? The initial draft List of IAS of Union Concern is to be drawn up by the Commission within a year of the Regulation's entry into force. The draft list must therefore be compiled by the end of 2015. However, at no stage in the process established by the Regulation is a precautionary approach expressly endorsed in relation to the drafting and adoption of that List. This is surprising given the importance of the precautionary approach in CBD guidance in relation to the making of decisions on IAS. In the absence of express provision for a precautionary approach, the following three arguments might however be made that such an approach *could* nonetheless be applied by the Commission. By contrast, a fourth and final line of reasoning contends that it will be very unlikely such an approach will in practice be utilised in the listing process.

6.1.1 Interpretation of 'available scientific evidence'

The criteria for listing stipulated in Article 4(3)⁹⁰ *inter alia* note the need for a finding that the IAS in question is alien to the Union, capable of establishing a viable population and spreading

⁸⁸ Recital 20

⁸⁹ Article 10(1) and (5)

⁹⁰ Article 4(3):

'Invasive alien species shall only be included on the Union list if they meet all of the following criteria:

in one biogeographical region shared by more than two Member States or one marine subregion. In addition, the species would be deemed ‘likely to have significant adverse effects on biodiversity or the related ecosystem services’ as well as a possible adverse impact on human health or the economy. All such findings must be ‘based on *available* scientific evidence’ (emphasis added). The required risk assessment must also be carried out with regard *inter alia* to the need for ‘an assessment of the potential future impacts having regard to *available* scientific evidence’ (emphasis added).⁹¹ There is therefore no reference in these conditions to the need for, say, *robust or conclusive or comprehensive* scientific evidence, but consistently only to *available* scientific evidence. It might therefore be argued, albeit very tentatively, that the adoption of a precautionary approach in the listing of invasive alien species would implicitly be appropriate and in line with Principle 15 Rio Declaration which notes that ‘[w]here there are threats of serious or irreversible damage, lack of full scientific evidence shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.’ However this argument would be much stronger if the text had also explicitly referred to the fact that findings should be based on the available scientific evidence even where that falls short of being conclusive. Alternatively, the condition might have been expressed in terms of requirement for ‘preliminary scientific evidence’ as is required for the introduction of emergency measures. No such references are in fact present in the Regulation with regard to the listing process.

6.1.2 Provisions of the Treaty on the Functioning of the European Union (TFEU)

Article 191(1) TFEU notes that Union policy on the environment shall contribute to the pursuit of environmental protection and preservation, as well as to the protection of human health. Furthermore, Article 191(2) TFEU indicates that the Union’s environmental policy is ‘based on the precautionary principle’. Bearing these two treaty provisions in mind in the specific context of protecting human health, the European Court of Justice (ECJ) in *Gowan Comercio Internacional e Servicos* indicated that:

[i]t follows from the precautionary principle that, where there is uncertainty as to the existence or extent of risks to the health of consumers, *the institutions may take protective measures without having to wait until the reality and the seriousness of those risks become fully apparent*’ [emphasis added].⁹²

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- (a) They are found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;
 - (b) They are found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current and in foreseeable climate conditions in one biogeographical region shared by more than two Member States of one marine subregion excluding their outermost regions;
 - (c) They are, based on available scientific evidence, likely to have significant adverse impacts on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;
 - (d) It is demonstrated by a risk assessment performed pursuant to Article 5(1) that action at Union level is required to prevent their introduction, establishment and spread;
 - (e) It is likely that the inclusion in the list will effectively prevent, mitigate or mitigate their adverse impact.’

⁹¹ Article 5(1)f (emphasis added)

⁹² Case C-77/09 *Gowan Comercio Internacional e Servicos v Ministero della Salute* European Court Reports(2010) para. 73. Furthermore ‘[w]here it proves to be impossible to determine with certainty the existence or extent of the alleged risk because of the insufficiency, inconclusiveness or imprecision of the results of studies conducted, but the likelihood of real harm to public health persists should the risk materialise, the precautionary principle justifies the adoption of restrictive measures, provided they are non-discriminatory and objective’; para. 76.

By analogy, it is submitted that the Commission would also be in a position to add an IAS to the List where there is uncertainty as to the existence of or extent of risk to either the environment or human health posed by the species in question. If one accepts this argument, a precautionary approach *could* therefore be utilised by the Commission in making any decisions on the listing of IAS. However, the Commission would not be obliged to adopt such an approach.

6.1.3 Risk assessment methodology

It has already been noted that Article 4(3) stipulates the need for a risk assessment in the listing process and that this risk assessment must demonstrate that ‘concerted action at Union level is required to prevent their introduction, establishment or spread’. Article 5(1) of the Regulation notes that a risk assessment is to have regard to certain elements which *inter alia* include the range of the species, its reproduction and spread patterns, any potential pathways of introduction, the risks of introduction, a projection as to likely future distribution, and the potential costs of damage. Furthermore, the European Commission is empowered to adopt by means of delegated legislation a detailed description of the application of these factors.⁹³ This description is to include the methodology to be applied in risk assessments. In the absence of an express endorsement of the precautionary approach in the listing criteria set out in the Regulation, the methodology endorsed by the Commission in this respect will be of much importance as it could potentially endorse the taking of a precautionary approach. However, this eventuality is improbable when one bears in mind that, although the precautionary principle is specifically mentioned in the particular situations already highlighted, such an approach is not expressly endorsed by the Regulation itself in relation to the listing process.

6.1.4 Application of World Trade Organisation (WTO) rules

It is submitted that it is unlikely that the Commission would opt to pursue any of the three abovementioned avenues which would arguably have allowed it to apply the precautionary approach to the listing process. The key reason for this submission is that the EU and all its Member States are members of the WTO and therefore bound by its trade rules. Those rules as they relate to the protection of human, animal or plant life or health from particular identified risks (such as pests and diseases) are to be found in the 1995 WTO Agreement on Sanitary and Phytosanitary Measures (‘SPS Agreement’). Trade is, of course, a key pathway for the introduction into the EU of IAS. It will be recalled that once listed under the Regulation, border and transportation controls must *inter alia* be applied to ensure that the IAS of Union Concern are not intentionally or unintentionally brought into the EU. The SPS Agreement potentially applies to such regulatory measures and aims to ensure that their application is not an arbitrary or unjustified restriction on trade. The relevant articles of the SPS Agreement in this context are Articles 2.2 and 5.1, and 5.7. Article 2.2 provides that

Members shall ensure that any sanitary or phytosanitary measure is applied only to the extent necessary to protect human, animal or plant life or health, is based on scientific principles *and is not maintained without sufficient scientific evidence, except as provided for in paragraph 7 of Article 5* (emphasis added).

By virtue of Article 5.1 any sanitary or phytosanitary measure must also be based on a risk assessment of the threat to human, animal or plant life or health, as is indeed similarly required under the Regulation.⁹⁴ As a general rule, therefore, any measure introduced for sanitary or

⁹³ Article 5(3)

⁹⁴ Recital 11 of the Regulation notes that the criteria for listing ‘should include a risk assessment pursuant to the applicable provisions under the relevant Agreements of the World Trade Organisation on placing trade restrictions on species.’

phytosanitary reasons cannot be maintained under WTO rules unless there is ‘sufficient scientific evidence’ to support it. This begs the question, what exactly amounts to ‘sufficient scientific evidence’? In *US – Poultry (China)* the WTO’s Appellate Body noted that for a measure to be maintained with ‘sufficient’ scientific evidence ‘the scientific evidence must ... be sufficient to demonstrate the existence of the risk which the measure is supposed to address.’⁹⁵ The need for such evidence would seemingly raise a significant question mark over whether a precautionary approach could be applied in relation to the introduction of an import restriction and still be in line with the provisions of Article 2.2.

However, could a precautionary approach be adopted in these circumstances under another provision of the SPS Agreement? Article 5.7 encouragingly notes that:

In cases where relevant scientific evidence is insufficient, a Member may provisionally adopt sanitary or phytosanitary measures on the basis of available pertinent information, including that from the relevant international organizations as well as from sanitary or phytosanitary measures applied by other Members. In such circumstances, Members shall seek to obtain the additional information necessary for a more objective assessment of risk and review the sanitary or phytosanitary measure accordingly within a reasonable period of time (emphasis added).

The WTO’s Appellate Body in *US/ Canada – Continued Suspension* referred to the application of Article 5.7 as a ‘temporary “safety valve”’ in situations where some evidence of risks exists but not enough to complete a full risk assessment, thus making it impossible to meet the rigorous standards set by Articles 2.2 and 5.1’.⁹⁶ In *Japan – Agricultural Products II* it was further made clear that the adoption and maintenance of any such provisional measure under Article 5.7 must comply with the following requirements:

(1) [be] imposed in respect of a situation where ‘relevant scientific information is insufficient’; and (2) adopted ‘on the basis of available pertinent information’. Pursuant to the second sentence of Article 5.7, such a provisional measure may not be maintained unless the Member which adopted the measure: (1) ‘seek[s] to obtain the additional information necessary for a more objective assessment of risk’; and (2) ‘review[s] the ... measure accordingly within a reasonable period of time’.⁹⁷

All four of these requirements must be met.⁹⁸ Moreover, the insufficiency of the scientific evidence must be such that an adequate risk assessment (as required by Article 5.1 of the SPS Agreement) is not possible.⁹⁹ Bearing this Article 5.7 jurisprudence in mind, the Regulation’s provisions as they relate to emergency measures potentially appear to be in line with Article 5.7 SPS Agreement. The WTO’s Appellate Body has indeed expressly acknowledged in *EC – Hormones* that ‘[t]he precautionary principle ... finds reflection in Article 5.7 of the SPS Agreement’.¹⁰⁰ However, it should be noted that any emergency measure adopted under the Regulation would of course need to be reviewed later and that, once emergency measures have been applied, an active obligation is placed on the Commission and the Member State concerned to seek to obtain a sufficiency of information to enable a full risk assessment to be carried out.

⁹⁵ WTO Appellate Body Report, *US – Poultry (China)* (2010), para. 7.200

⁹⁶ WTO Appellate Body Report, *US/ Canada – Continued Suspension* (2008), para. 678

⁹⁷ WTO Appellate Body Report, *Japan – Agricultural Products II* (1999), para.89. What amounts to a ‘reasonable period of time’ in this context was discussed in the same case; see para. 93

⁹⁸ *Id.*

⁹⁹ WTO Appellate Body Report, *Japan – Apples* (2003), para. 184

¹⁰⁰ WTO Appellate Body Report, *EC - Hormones* (1998), para. 124

The Appellate Body in *EC – Hormones* did nonetheless note that:

[A] Panel charged with determining, for instance, whether ‘sufficient scientific evidence’ exists to warrant the maintenance by a Member of a particular SPS measure may, of course, and should, bear in mind that responsible, representative governments commonly act from perspectives of prudence and precaution where risks of irreversible, e.g. life-terminating, damage to human health are concerned.¹⁰¹

However and importantly, the Appellate Body additionally stated that the precautionary principle ‘has not been written into the SPS Agreement as a ground for justifying SPS measures that are otherwise inconsistent with the obligations of members set out in particular provisions of that Agreement.’¹⁰² The Appellate Body’s deliberations in this case has prompted two highly distinguished WTO legal experts to conclude that ‘[t]he practical effect ... is to limit the relevance of the precautionary principle under the SPS Agreement to the situation covered by Article 5.7. The precautionary principle can thus not be relied upon to add flexibility to the scientific disciplines in Articles 2.2 and 5.1 of the SPS Agreement.’¹⁰³ In sum, the precautionary principle can legitimately apply under WTO rules to the introduction of *emergency* measures, but it is very doubtful indeed that it could otherwise be applied to justify a more permanent measure as the latter would very probably fail the test for ‘sufficient’ scientific evidence under the provisions of Article 2.2. To conclude, the Regulation is very arguably in line with both the CBD Guidance and the SPS Agreement in relation to the applicability of a precautionary approach to the introduction of emergency measures. However, no express mention is made to the application of such an approach to the listing of IAS of Union Concern. It is likely that a precautionary approach in the listing process will not take place as it is very arguably not allowed under the SPS Agreement to which the EU and its Member States are legally bound. It is submitted that the EU in adopting the approach to the listing of IAS of Union Concern in the Regulation has chosen to side with the general line endorsed by the ‘hard law’ SPS Agreement rather than the ‘soft law’ CBD guidance.

6.2 Three-stage hierarchical approach - Guiding Principle 2

The CBD guidelines advocate that priority should be given to preventing the introduction of IAS. Prevention is cost-effective and regarded as more ‘environmentally desirable than measures taken following introduction and establishment of an invasive alien species.’¹⁰⁴ It is, of course, true that any action designed to prevent introduction will negate the need for the significant human and economic resources otherwise required to eradicate IAS once they have been released in to the environment. Prevention is therefore the first approach to be applied where possible. However, bearing in mind that such an approach will not always be sufficient, there must also be a system of ‘early and rapid action ... to prevent [the] establishment’ of IAS that have already been introduced.¹⁰⁵ In this respect, the preference would be to eradicate the species as soon as possible.¹⁰⁶ It is, for example, believed that had the Zebra mussel (*dreissena polymorpha*) invasion of the Ebro Delta (Spain) been tackled earlier by means of eradication there would not now be a need for an ongoing effort costing more than 4 million Euro each year to limit the damage caused by the invasion and prevent the further spread of these alien

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ P Van den Bossche and W Zdouc, *The Law and Policy of the World Trade Organization* (3rd Ed., CUP, 2013), 932. Peter van Den Bossche is a current member of the WTO’s Appellate Body, while Werner Zdouc is the current Director of the Appellate Body Secretariat.

¹⁰⁴ Guiding Principle 2(1)

¹⁰⁵ Guiding Principle 2(2)

¹⁰⁶ *Id.* See further Principle 13

mussels.¹⁰⁷ Early and rapid action to include detection and eradication is therefore the second approach to be applied in terms of hierarchy. Nonetheless, the CBD guidance also acknowledges that a programme of eradication is not always possible or that there may be a lack of resources to implement such an approach. As such, efforts should then be taken to contain the spread of the species,¹⁰⁸ and introduce long-term control measures.¹⁰⁹ Action to contain and control is therefore the third stage of the hierarchical approach endorsed by the Guiding Principles. To what extent does the Regulation endorse such a three-stage hierarchical approach?

6.2.1 Prevention – stage one

The preamble of the Regulation fully endorses the notion that priority should indeed be given to preventing the introduction of invasive alien species thereby halting IAS establishment from the outset; this preventive approach is also recognised as being both cost-effective and desirable from an environmental point of view in line with CBD guidance.¹¹⁰ The application of a preventive approach, wherever possible, is indeed also generally endorsed in the text of the Regulation. Those aforementioned restrictions, for example, which are placed on IAS of Union Concern are in line with such a general approach.¹¹¹ Indeed, where derogations from such restrictions are allowed under Article 8 by way of permit to facilitate research, ex-situ conservation, or the development of medicinal products, tight conditions are to be applied to ensure the proper containment and surveillance of the species concerned thereby limiting the chances of escape or removal into the wider environment. Contingency measures - including eradication plans - in anticipation of possible escape are also required.¹¹² Two further provisions in the Regulation can also be said to be generally in line with the preventive approach: first, a Member State's ability to introduce its own emergency measures in relation to IAS not as yet on the List but with the potential to meet the criteria for such listing;¹¹³ and, secondly, the obligation placed on Member States to perform an analysis of the pathways of unintentional introduction of IAS of Union Concern which should include an identification of those pathways of priority concern due to their potential for either introducing large numbers of species or species particularly damaging to the environment or public health.¹¹⁴

It is also of interest to note that the CBD guidance not only notes the need to take action to prevent the spread of IAS between States, but also within States. In this regard, the Regulation gives Member States the opportunity to establish their own national list of IAS of concern

¹⁰⁷ European Commission, *Invasive Alien Species: a European Response* (European Commission, 2014), 11

¹⁰⁸ Guiding Principle 14

¹⁰⁹ Guiding Principle 15

¹¹⁰ Preamble, paragraph 15

¹¹¹ These restrictions are noted in full in Article 7:

1. Invasive alien species of Union concern shall not be intentionally:
 - (a) brought into the territory of the Union, including transit under customs supervision;
 - (b) kept, including in contained holding;
 - (c) bred, including in contained holding;
 - (d) transported to, from or within the Union, except for the transportation of species to facilities in the context of eradication;
 - (e) placed on the market;
 - (f) used or exchanged;
 - (g) permitted to reproduce, grown or cultivated, including in contained holding; or
 - (h) released into the environment.
2. Member States shall take all necessary steps to prevent the unintentional introduction or spread, including, where applicable, by gross negligence, of invasive alien species of Union concern.

¹¹² Article 8

¹¹³ Article 10

¹¹⁴ Article 13(1)

(‘national list of invasive alien species of Member State concern’), and apply national restrictions that are compatible with the TFEU.¹¹⁵ The ability to draw up such a national list and apply national restrictions is an acknowledgement of the fact that not all invasive species will necessarily require control at the EU level, but might need to be regulated within a given Member State. The hedgehog (*erinaceus europaeus*) is an example of such a species; although native to western and some parts of northern Europe (including mainland Scotland), it is non-native and invasive on the isles of North Uist, South Uist and Benbecula which form part of Scotland’s Western Isles.¹¹⁶ The ability to create national lists of IAS is in line with the CBD’s preventive approach.

The Regulation can nevertheless be criticised for widening the ability to derogate too far. By virtue of Article 9 Member States may ‘in exceptional circumstances’ allow permits to be given to establishments to carry out activities other than those provided for in Article 8 for reasons of ‘compelling public interest, including those of a *social or economic nature*.’¹¹⁷ This significantly broadens the potential for derogations and was included as a consequence of negotiations between the European Parliament and the Council on the Commission’s original proposal. Any such derogation would need to be vetted and approved by the Commission,¹¹⁸ and, if approved, the latter can establish conditions to be included in any permit issued by a Member State.¹¹⁹ These conditions may well include the need to contain the IAS in question in specified establishments to prevent escape or unlawful release.¹²⁰ Nonetheless, the provisions of Article 9 allow for the potential authorisation of certain commercial activities which would not otherwise be allowed.¹²¹

6.2.2 Early and rapid action: detection and eradication – stage 2

It will be recalled that the CBD Guiding Principles calls for a system of ‘early and rapid action ... to prevent [the] establishment’ of IAS that have already been introduced, and that a preference is expressed to eradicate at the earliest opportunity.¹²² In relation to the need for an early and rapid action the Regulation places a clear obligation on all Member States to establish a surveillance system within 18 months of the adoption of the List¹²³ which is to be ‘sufficiently dynamic to detect rapidly the appearance ... of any invasive alien species of Union Concern, whose presence was previously unknown’.¹²⁴ Moreover, once an IAS of Union Concern has been detected the Member State concerned must inform the Commission ‘without delay’ as well as other Member States,¹²⁵ and within three months of such notification ‘apply eradication

¹¹⁵ Article 12(1). An ‘Invasive alien species of Member State concern’ is defined as ‘an invasive alien species other than an invasive alien species of Union concern, for which a Member State considers on the basis of scientific evidence that the adverse impact of its release and spread, even where not fully ascertained, is of significance for its territory, or part of it, and requires action at the level of that Member State’; Article 3(4).

¹¹⁶ See ‘Why hedgehogs are not welcome in the Hebrides’; <<http://www.bbc.co.uk/nature/22093131>>

¹¹⁷ Article 9(1)

¹¹⁸ *Id.*

¹¹⁹ Article 9(6)

¹²⁰ Article 9(1)

¹²¹ Note should be made that the Regulation also includes certain transitional provisions for commercial stocks (Article 32). These *inter alia* include the ability of keepers of a commercial stock of specimens of IAS of Union Concern to sell such specimens for a period of one year after inclusion of the species in question on the List to non-commercial users. It is also of interest to note that, by virtue of Article 31, non-commercial owners of specimens of IAS on the List are allowed to keep them until they die if they are ‘companion animals’ as long as they are kept in contained holding and measures put in place to make sure reproduction and escape are not possible.

¹²² Principle 2(2)

¹²³ Article 14(1)

¹²⁴ Article 14(2)

¹²⁵ Article 16

measures’¹²⁶ utilising methods which ‘are effective in achieving the complete and permanent removal of the population’.¹²⁷ The Regulation therefore broadly complies with the CBD’s Guiding Principles in this regard. An early response is duly recognised as being the most cost-effective and efficient manner in which to tackle the spread of an invasive alien species.

6.2.3 Containment and control: management of established IAS of Union Concern – stage 3

It has already been noted that the Guiding Principles acknowledge that a programme of eradication is not always possible or that there may be a lack of resources to implement such an approach. In these circumstances steps should be taken to contain the spread of the species to within a given area and to ensure long-term control measures are in place. Reflecting the essence of this third stage of the hierarchical approach the Regulation does indeed specify that Member States must have effective management measures in place so that the impact of widely spread IAS of Union Concern are minimised within 18 months of an IAS being placed on the list;¹²⁸ such national measures will include not only eradication programmes but also steps aimed at the population control or containment of a given population.¹²⁹ The need to have in place such management measures is to be welcomed. However, although not out of line with CBD guidance, the time limit of 18 months within which such measures are to be put into place is less than ideal in facilitating the effective control of the species in question.

6.3 Ecosystem approach - Guiding Principle 3

This CBD Guiding Principle notes that ‘[m]easures to deal with invasive alien species should, as appropriate, be based on the ecosystem approach, as described in decision V/6 of the Conference of the Parties.’ Decision V/6 describes such an approach as ‘a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.’¹³⁰ This ecosystem approach also focuses on the ‘structure, processes, functions, and interactions among organisms and their environment’,¹³¹ and underlines the importance of the ‘conservation of ecosystem structure and functioning, in order to maintain ecosystem services’.¹³²

The Regulation’s provisions relating to rapid eradication of IAS at an early stage of invasion could be said to be generally in line with this approach as methods of eradication should be used but ‘with due regard to human health and the environment, especially non-targeted species and their habitats’.¹³³ Furthermore a Member State may in fact decide not to apply eradication measures at all if they ‘have serious adverse impact on human health, the environment and other species.’ Additionally, applicable management measures envisaged by the Regulation ‘shall include actions applied to the receiving ecosystem aimed at increasing its resilience to current and future invasions’,¹³⁴ and are to be applied in Member States so that the impact of IAS on biodiversity and related ecosystem services are minimised.¹³⁵

Another key principle of the ecosystem approach noted in CBD Decision V/6 is that ‘ecosystem managers should consider the effects of their activities on adjacent and other ecosystems’. The impact of management measures by a given ecosystem manager aimed at the eradication,

¹²⁶ Article 17(1)

¹²⁷ Article 17(2)

¹²⁸ Article 19(1)

¹²⁹ Article 19(2)

¹³⁰ CBD Decision V/6, para. 1

¹³¹ *Id.*, Principle 5

¹³² *Id.*, para. 1 and Principle 5

¹³³ Article 17(2)

¹³⁴ Article 19(2)

¹³⁵ Article 19(1)

population control or containment of invasive alien species can clearly have a negative effect on adjacent or other ecosystems. Such ecosystems may span territorial boundaries and it is therefore of interest to note that the Regulation seeks to foster consultation and cooperation between Member States by, for example, applying jointly agreed management measures where there is a risk that a given invasive alien species is likely to spread to another Member State.¹³⁶

What of the need to restore a given ecosystem adversely affected by the spread of an IAS? CBD Decision V/6 acknowledges the need to not only conserve but also, where appropriate, restore ecological interactions and processes to preserve ecosystem structure and functioning. This could be said to be in line with the obligation placed on Member States in the Regulation to take ‘appropriate restoration measures to assist the recovery of an ecosystem which has been degraded, damaged, or destroyed’ by IAS of Union Concern.¹³⁷ It is of interest to note, however, that the final text of the Regulation following European Parliament and Council discussion introduced a proviso that such restorative measures would not be required when a cost-benefit analysis indicated that ‘the costs of those measures will be high and disproportionate to the benefits of restoration’.¹³⁸ This represents a significant watering down of the obligation to take restorative action as one would anticipate that restoration costs in many instances may well be substantial, or that a given Member State will at least claim they are prohibitive when justifying a decision not to take restorative action.

6.4 The Role of States - Guiding Principle 4

Guidance from the CBD underlines that States:

‘should recognize the risk that activities within their jurisdiction or control may pose to other States as a potential source of invasive alien species, and should take appropriate individual and cooperative actions to minimize that risk, including the provision of any available information on invasive behaviour or invasive potential of a species.’¹³⁹

Furthermore, an onus is placed on States to ‘identify, as far as possible, species that could become invasive and make such information available to other States’ with a view to minimizing the spread and impact of IAS.¹⁴⁰

A number of the Regulation’s provisions could be said to be in line with this approach. For example, the fact that a given Member State is allowed to take emergency measures if it is aware of the imminent introduction in its territory of an IAS which is not yet included on the List, but which it finds is likely to meet the criteria for listing.¹⁴¹ Such emergency measures may include a ban on the transit to and from other EU States. In that respect, the Member State is endeavouring to reduce the risk posed to a neighbouring Member State. Any emergency measure imposed must also be made known to all other Member States together with accompanying evidence as to the risk involved.¹⁴² A further example is provided by the fact that any Member State can submit to the Commission a request that an IAS be added to the

¹³⁶ Article 19(5)

¹³⁷ Article 20(1). Under the Regulation restoration measures will include as a minimum steps not only to ‘increase the ability of an ecosystem exposed to disturbance caused by the presence of [IAS of Union Concern] to resist, absorb, accommodate to and recover from the effects of disturbance’, but also measures which ‘support the prevention of reinvasion following an eradication campaign’; Article 20(2).

¹³⁸ Article 20(1)

¹³⁹ Principle 4(1)

¹⁴⁰ Principle 4(3)

¹⁴¹ Article 10(1)

¹⁴² Article 10(2)

List.¹⁴³ In so doing, they must provide certain information relevant to the case including a risk assessment and evidence that *inter alia* the IAS concerned is likely to have significant adverse impacts on biodiversity or related ecosystem services. As such they would indeed be identifying species which ‘could become invasive’ and would also ultimately be making information available to other States (via the Commission) in accordance with the CBD Guiding Principles.

6.5 Research and Monitoring - Guiding Principle 5

The Parties to the CBD have seen fit to endorse the need for research on and the monitoring of IAS ‘to develop an adequate knowledge base to address the problem’. More particularly, research on an IAS should document ‘(a) the history and ecology of invasion (origin, pathways and time-period); (b) the biological characteristics of the invasive alien species; and (c) the associated impacts at the ecosystem, species and genetic level and also social and economic impacts, and how they change over time.’ Apart from an obligation on Member States to carry out a ‘comprehensive analysis of the pathways of unintentional introduction and spread of [IAS of Union Concern], at least, in their territory’,¹⁴⁴ there is surprisingly no express obligation placed on Member States in the Regulation to carry out this type of general research. The Regulation is therefore deficient in this regard when compared to the CBD Guiding Principles. This is particularly disappointing as recognised IAS experts have recently concluded that ‘managers lack appropriate risk assessment methods to prioritise invasion threats because few general models or “rules of thumb” exist on which to predict the occurrence and impacts of IAS’,¹⁴⁵ and have indeed endorsed the need to ‘target the R&D needed to increase confidence levels in risk assessment methods.’¹⁴⁶ The Regulation could have been improved by specifically highlighting the need for general research in a number of areas such as the ecology and biology of IAS, the susceptibility of European ecosystems to invasions, and the wide-ranging impact of IAS for society.¹⁴⁷

As far as monitoring is concerned, the measure is more comprehensive. Reflecting the CBD guidance, the Regulation stipulates that ‘surveillance systems offer the most appropriate means of early detection of new invasive species’,¹⁴⁸ and that such monitoring should include both targeted and general surveys.¹⁴⁹ More particularly, Member States are placed under an obligation to establish the surveillance system of IAS of Union Concern referred to earlier that records data on the occurrence of IAS (both new and already established species) within 18 months of the List being adopted.¹⁵⁰ This system is also to be utilised to monitor the effectiveness of any eradication, population control or containment programmes,¹⁵¹ and to contribute to the early detection of IAS.¹⁵² The obligation to monitor is encouraging especially as the majority of Member States had not established a monitoring system specifically to identify the presence of IAS prior to adoption of the Regulation.¹⁵³ In implementing their monitoring obligations, it is submitted that Member States must seek to target the most

¹⁴³ Article 4(4)

¹⁴⁴ Article 13(1)

¹⁴⁵ JM Mc Caffrey and others, ‘Tackling Invasive Alien Species in Europe: the Top 20 Issues’ (2014) 5(1) *Management of Biological Invasions* 1, 10

¹⁴⁶ *Id.*, 4

¹⁴⁷ A number of these areas of potential research are highlighted in the Bern Convention’s ‘European Strategy on Invasive Alien Species’ (n 12), 2.2 at Box 4

¹⁴⁸ Recital 22

¹⁴⁹ *Id.*

¹⁵⁰ Article 14(1) & (2)

¹⁵¹ Article 19(4)

¹⁵² Article 14(2)b

¹⁵³ European Commission (n 67), 93

potentially important points of entry (such as airports, train stations and ports), as well as other relevant locations (such as zoos and horticultural establishments). An effective surveillance system is made all the more important when one bears in mind that, once an IAS is within the EU's borders, there will be no border checks between Member States in line with the functioning of the internal market.

6.6 Education and public awareness - Guiding Principle 6

Stressing that 'raising the public's awareness of the invasive alien species is crucial to the successful management of invasive alien species', this Guiding Principle underlines the importance of promoting 'education and public awareness of the causes of invasion and the risks associated with the introduction of alien species.' Certainly a general lack of awareness of the problems caused by IAS creates a considerable impediment to addressing IAS spread. The Regulation acknowledges this and would seem to be in line with CBD guidance by, for example, placing Member States under an obligation to establish and implement action plans to address the key pathways of unintentional introduction of IAS of Union Concern into its territory; these plans will include measures designed to 'raise awareness'.¹⁵⁴ It is suggested that action to increase awareness of the causes and risks of IAS must seek to enlighten not only the general public, but go beyond the CBD guidance by also educating key decision-makers, NGOs, and particular organisations within, for example, the tourist, fisheries, transport, horticultural and agricultural industries.¹⁵⁵ Member States would do well to take notice of some existing programmes which have sought to raise awareness within a local population or target group. These include the 'Weedbuster' programme in Australia which encourages the public to take part in events in their local area to eradicate weeds (including invasive alien species),¹⁵⁶ and the AlterIAS ('ALTERnatives to Invasive Alien Species') project designed to improve awareness of IAS within the horticultural industry.¹⁵⁷

CBD guidance additionally notes that raising awareness is particularly important when mitigation measures are required. At this point 'education and public-awareness-oriented programmes should be set in motion so as to engage local communities and appropriate sector groups in support of such measures.' In this respect, the Regulation stipulates that the public must be given an opportunity to participate in the drawing up of relevant action plans and in the establishment of management measures to address IAS of Union Concern,¹⁵⁸ thereby 'contributing to public awareness of environmental issues and support for the decisions taken.'¹⁵⁹ It is clear that some plans to eradicate IAS have failed through lack of support. Public opposition to the removal of, for example, the grey squirrel (*sciurus carolinensis*) in Italy, the hedgehog from the Western Isles, and of the population of coypu (*myocastor coypus*) from a lake in Sicily have marked the end of planned eradications.¹⁶⁰

6.7 Border control and quarantine measures - Guiding Principle 7

This aspect of the CBD guidance stipulates that States should introduce 'border controls and quarantine measures' for IAS that would ensure that intentional introductions are subject to appropriate authorization and also that unintentional introductions are minimized. More

¹⁵⁴ Article 13(4)

¹⁵⁵ This is also acknowledged in the Bern Convention's 'European Strategy on Invasive Alien Species' (n 12), 1 at Box 2.

¹⁵⁶ <<http://www.daf.qld.gov.au/plants/weeds-pest-animals-ants/weeds/weedbusters>>

¹⁵⁷ <<http://www.alterias.be/en/about-us-the-alterias-project/project-description>>

¹⁵⁸ Article 26

¹⁵⁹ Recital 29

¹⁶⁰ See P Genovesi, 'Eradications of invasive alien species in Europe: a review' (2005) 7 Biological Invasions 127, 130-131

particularly in relation to intentional introductions, the Regulation specifies the need for structures to be put in place by 2 January 2016 to perform ‘official controls’ to prevent introduction.¹⁶¹ Such controls comprise ‘documentary, identity and, where necessary, physical checks’.¹⁶² No further detail is provided as to the nature of the controls but presumably they could indeed include quarantine measures which is, of course, a type of ‘physical check’.¹⁶³ With regard to unintentional introduction, the Regulation obliges Member States to include in their action plans on IAS pathways measures that ‘ensure appropriate checks at the Union borders’.¹⁶⁴ The checks in question are to be made when goods commonly linked to the introduction of IAS are brought into the Union.¹⁶⁵ Checks are not however to be made when goods already within the Union pass between Member States. This is compliant with the notion of the free movement of goods within the EU’s internal market, but is not however in line with the CBD guidance in that it fails to impose checks when goods pass through national borders between EU Member States.

6.8 Exchange of information - Guiding Principle 8

The need to share information on IAS is underlined in the CBD guidance:

States should assist in the development of an inventory and synthesis of relevant databases, including taxonomic and specimen databases, and the development of information systems and an interoperable distributed network of databases for compilation and dissemination of information on alien species for use in the context of any prevention, introduction, monitoring and mitigation activities.

In this context it is acknowledged that there are existing databases established which already provide invaluable information on Europe’s IAS. Arguably the most significant is the European Alien Species Information Network (EASIN), which is a project set up by the European Commission’s Joint Research Centre and provides free information on IAS (such as location, taxonomy and applicable pathways) from a variety of existing databases.¹⁶⁶ Several are national databases, resources which have been established by some - but not all - Member States. Prior to adoption of the Regulation, for example, no information could be found in relation to the establishment of joint information systems on IAS in nine Member States.¹⁶⁷

The Regulation importantly stipulates that the Commission is to establish ‘progressively’ an information support system which within a year of the entry into force of the Regulation will include ‘a data support mechanism interconnecting existing data systems [on IAS] paying particular attention to information on the [IAS of Union Concern]’.¹⁶⁸ Once an IAS of Union Concern has been detected the Member State concerned must inform the Commission and other Member States,¹⁶⁹ and apply eradication measures.¹⁷⁰ The information support system to be

¹⁶¹ Article 15(1)

¹⁶² Article 15(3)

¹⁶³ The quarantine of certain animals is undoubtedly allowed under certain EU measures: *see*, for example, Directive 91/496/ EEC laying down the principles governing the organization of veterinary checks on animals entering the Community from third countries, OJ 1991 L268/56 ; article 12(1)b.

¹⁶⁴ Article 13(4)

¹⁶⁵ Article 15(3)

¹⁶⁶ <<http://easin.jrc.ec.europa.eu>>. Initiatives which provide information to EASIN include the important NOBANIS database (which covers IAS in North and Central Europe) and the DAISIE database which covers IAS in all Member States. At the international level, *see* the Global Invasive Species Database: <www.issg.org/database/welcome>

¹⁶⁷ European Commission (n 67), 58

¹⁶⁸ Article 25(1) and (2)

¹⁶⁹ Article 16

¹⁷⁰ Article 17(1)

established by the Commission will from its infancy assist the Commission and Member States in the handling of Member State notifications of this nature.¹⁷¹ Furthermore, the data support mechanism will within four years of entry into force of the Regulation be a system which allows information to be exchanged which ‘may’ include information on ‘invasive alien species of Member State concern, pathways, risk assessment, management and eradication measures, when available.’¹⁷² It is unfortunate that the provision in the Regulation only refers to the fact that such information *may* rather than *must* be included, but it is to be hoped that over a period of time an EU-wide system of information support will be established which will comply with CBD guidance.¹⁷³

CBD guidance further stipulates that the dissemination of information gathered on IAS should be facilitated through the CBD’s Clearing-House Mechanism (CHM). The latter seeks to provide easy access to knowledge and information relating to the aims of the CBD, including that relating to the control of IAS. Whilst the CHM is not specifically mentioned in the Regulation, Art 22(1) places Member States under an obligation to ensure close coordination with ‘existing structures arising under ... international agreements’, and Article 25(2) stipulates that the information support mechanism established by the Regulation will connect with existing data systems on IAS. Although specific reference to the internationally important CHM in the Regulation might have been helpful,¹⁷⁴ it is fair to assume that such information will be made available to it bearing in mind the EU and its Member States already contribute to the CHM in relation to a variety of biodiversity-related issues.¹⁷⁵

6.9 Cooperation, including capacity-building - Guiding Principle 9

The Regulation is of course itself an example of cooperation between States to combat the spread of IAS of Union Concern. As such, the measure is certainly ‘a cooperative effort between two or more countries’ which according to the CBD guidance may be required in particular circumstances. The latter also places an emphasis on the sharing of information on IAS ‘with a particular emphasis on cooperation among neighbouring countries, between trading partners, and among countries with similar ecosystems and histories of invasion. Particular attention should be paid where trading partners have similar environments’.¹⁷⁶ The sharing of information of this type is likely to form part of the information support system already discussed which is to be established by the Commission. Additionally, Member States are obliged by the Regulation to ‘make every effort’ to coordinate their efforts with other Member States particularly where the States in question share the same biogeographical and marine regions, borders and river basins.¹⁷⁷ Cooperation of this nature is essential as a given habitat or ecosystem may well straddle national boundaries thereby requiring effective coordination of preventive and/ or mitigation activity between those Member States concerned. A good example of existing cross-border cooperation to control an IAS is the Bern Convention’s Action Plan for eradication of the Ruddy Duck in the Western Palearctic

¹⁷¹ Article 25(2)

¹⁷² Article 25(3)

¹⁷³ After all, much of this type of information is to be routinely gathered by Member States – for example, eradication measures applied at the national level are to be monitored by the Member State concerned and information as to their effectiveness given to the Commission and other Member States (Article 17(3) and (4)). The sharing of this type of information either within the information support system of otherwise would be invaluable as it would shine a light on which particular eradication approach has proved effective and may thereby offer lessons to other Member States contemplating an eradication programme.

¹⁷⁴ The more general wording could however be useful if the CBD mechanism were to change its name in the future.

¹⁷⁵ See <<http://www.cbd.int/chm/network/#tab=4>>

¹⁷⁶ Principle 9(a)

¹⁷⁷ Article 22(1)

region.¹⁷⁸ Feral Ruddy Ducks initially spread from the UK to neighbouring countries (France, the Netherlands and Belgium), but went on to migrate to over 20 countries in the Western Palaearctic area. The UK population of these birds is believed to have been reduced to approximately 40 as of April 2014, and the 2011 Bern Convention Action Plan aimed to eradicate all Ruddy Ducks in the Western Palaearctic by 2015.¹⁷⁹

Furthermore, Member States under the Regulation will ‘endeavour’ to cooperate with third countries to fulfil the Regulation’s aims,¹⁸⁰ and also there is an obligation that ‘based on best practices’ the Commission and the Member States will ‘develop guidelines and training programmes to facilitate the identification and detection of [IAS of Union Concern] and the performance of efficient and effective controls.’¹⁸¹ In this way there will therefore be an opportunity to learn from Member States’ experiences as to which controls are the more successful in preventing the intentional introduction of IAS of Union Concern.

6.10 Intentional introduction - Guiding Principle 10

The CBD Parties agreed that the intentional introduction of invasive or potentially invasive alien species should not take place without prior authorization, and that an ‘appropriate risk analysis, which may include an environmental impact assessment, should be carried out as part of the evaluation process’ before deciding whether to authorize the introduction.¹⁸² The Regulation certainly requires official controls to be in place to prevent the intentional introduction of IAS of Union Concern into the EU without prior authorisation.¹⁸³ The EU measure also requires that a risk assessment is carried out and the results taken into account in making the decision whether or not to list a particular alien species.¹⁸⁴ The risk assessment includes the need to assess the adverse impact on biodiversity and related ecosystems, as well as on human health, safety and the economy.

However, the CBD Guiding Principles further stipulates that decisions

concerning intentional introductions should be based on the precautionary approach, including within a risk analysis framework... . Where there is a threat of reduction or loss of biological diversity, lack of sufficient scientific certainty and knowledge regarding an alien species should not prevent a competent authority from taking a decision with regard to the intentional introduction of such alien species to prevent the spread and adverse impact of invasive alien species.

As previously noted, there is limited express reference to a need for such a precautionary approach in the Regulation. Certainly the Regulation fails to provide an express basis for the application of such an approach in carrying out risk assessments and, in this regard, the measure - as earlier indicated – would appear to be out of line with the CBD Guiding Principles.

6.11 Unintentional introductions - Guiding Principle 11

¹⁷⁸ The initial Action Plan was adopted in 1999. A subsequent plan was adopted in 2011; see Bern Convention, *Eradication of the Ruddy Duck in the Western Palaearctic: a Review of Progress and a Revised Action Plan, 2011-2015* (Council of Europe, 2010); document T-PVS/Inf (2010) 21 revised.

¹⁷⁹ Animal Health and Veterinary Laboratories Agency, *UK Ruddy Duck Eradication Programme Project Bulletin* (April 2014)

¹⁸⁰ Article 22(2)

¹⁸¹ Article 15(8). This is also generally in line with Guiding Principle 9(c) which encourages capacity-building which may include ‘the development of training programmes’ where States lack the requisite expertise.

¹⁸² Principle 10(1)

¹⁸³ Article 15(2)

¹⁸⁴ Article 5(2)

The CBD Guiding Principles note that States ‘should have in place provisions to address unintentional introductions’ which could include statutory and regulatory provisions as well as the formation or strengthening of relevant bodies. The Regulation for its part indicates that Member States ‘shall take *all necessary steps* to prevent the unintentional introduction or spread of invasive species of Union Concern’¹⁸⁵ which could be said to be broadly in line with such CBD guidance as the highlighted words would allow for the application of numerous measures including those specifically identified in the CBD guidance. The Regulation’s recitals more particularly note that measures could include both voluntary and mandatory measures.¹⁸⁶ The Regulation interestingly and positively also provides an animal welfare consideration not included in the CBD guidance in that where animals are to be eradicated they should be ‘spared any avoidable pain, distress or suffering.’¹⁸⁷ In this respect, best practices should be taken into account such as the ‘Guiding Principles on Animal Welfare’ developed by the World Organisation for Animal Health.¹⁸⁸ Adherence to such welfare issues may indeed increase the public’s acceptance of eradication plans.

According to the CBD guidance, pathways of unintentional introductions need to be identified. The Regulation complies with this guidance as far as IAS of Union Concern are concerned in that it obliges Member States to undertake a thorough analysis of such pathways within 18 months of the adoption of the List and to identify those pathways to be regarded as priority (‘priority pathways’) due to the high volume of IAS introductions and the potential damage that is caused by such species.¹⁸⁹ Action plans are then to be drawn up at the national level in relation to the priority pathways describing the measures that will be adopted to address them.¹⁹⁰ These pathways will include measures that must be implemented, but can also include the adoption of codes of conduct or good practice.¹⁹¹ The types of measures will, for example, include those seeking to raise awareness and others seeking to minimise the contamination of goods by IAS.¹⁹² Recognition of the need to identify relevant pathways is an important step forward when one bears in mind that no information on any such identification process could be found in eleven Member States in 2011.¹⁹³

Arguably however the Regulation has not gone far enough in relation to the release of untreated ballast waters bearing in mind that ‘[a]t international and intra-EU levels, releases of untreated ballast water and hull fouling are by far the most significant vectors of unintentional introductions of alien species.’¹⁹⁴ It will be recalled that action under the Regulation in relation to pathways can include both voluntary and mandatory measures and, in relation to the former, the recitals to the Regulation specifically make mention of the voluntary guidelines in the International Maritime Organisation’s Guidelines for the Control and Management of Biofouling.¹⁹⁵ In relation to the latter, the recitals to the Regulation additionally refer to the 2004 International Convention for the Regulation of Ships Ballast Water and Sediments, and

¹⁸⁵ Article 7(2) [emphasis added]

¹⁸⁶ Recital 21 which further notes that measures should ‘build on the experience gained ... in managing certain pathways, including measures established through the International Convention for the Control and Management of Ships Ballast Water and Sediments adopted in 2004. Accordingly, the Commission should take all appropriate steps to encourage Member States to ratify that Convention.’

¹⁸⁷ Article 17(2)

¹⁸⁸ Recital 25

¹⁸⁹ Article 13(1)

¹⁹⁰ Article 13(2)

¹⁹¹ *Id.*

¹⁹² Article 13(4)

¹⁹³ European Commission (n 67), 55

¹⁹⁴ Institute for European Environmental Policy, *Assessment to support continued development of the EU strategy to combat invasive alien species* (IEEP, 2010), 111

¹⁹⁵ Recital 21

urges the Commission to take steps to encourage Member States to ratify it.¹⁹⁶ Bearing in mind the importance of this pathway, the argument for the introduction of mandatory, rather than simply voluntary, measures is strong. At the time of writing, whilst the 2004 treaty will surely enter into force shortly,¹⁹⁷ only seven EU Member States have ratified.¹⁹⁸ The EU may therefore need to adopt its own mandatory measures at a later date if further Member States fail to ratify the 2004 international treaty or there is evidence of a lack of adherence to the IMO's voluntary guidelines.¹⁹⁹

6.12 Mitigation of impacts - Guiding Principle 12

This Guiding Principle stipulates that, once the presence of an IAS has been established, States should take steps - such as eradication, containment and control - to mitigate adverse impact. The need to mitigate the impact of IAS by such means is also stipulated in the Regulation.²⁰⁰ What of the costs of taking mitigation measures? The Guiding Principles note that those responsible for the introduction of the IAS in question 'should bear the costs of control measures and biological diversity restoration where it is established that they failed to comply with the national laws and regulations.'²⁰¹ 'Control measures' are not defined in the CBD's guidance but are referred to under a section relating to the 'mitigation of impacts'. It might therefore be argued that the Regulation in fact endorses the polluter-pays principle to a greater extent than the international guidance as the EU measure notes that Member States shall aim to recover not only mitigation and restoration costs, but also the costs of preventive measures.²⁰²

6.13 Eradication, containment and control - Guiding Principles 13, 14 and 15

Whilst priority should indeed be given to preventing the introduction of IAS, thereby halting their establishment from the outset, this is not always possible. As mentioned earlier, eradication is then often the most appropriate course of action, the CBD guidance noting that '[t]he best opportunity for eradicating invasive alien species is in the early stages of invasion, when populations are small and localized'. In this regard, Member States are obliged under the EU measure to notify the Commission of the early detection of an IAS of Union Concern and

¹⁹⁶ *Id.*

¹⁹⁷ Article 18(1) of the treaty notes that it will enter into force 'twelve months after the date on which not less than thirty States, the combined merchant fleets of which constitute not less than thirty-five percent of the gross tonnage of the world's merchant shipping' have ratified. At the time of writing (May 2015) forty-four states had ratified the treaty representing approximately 32.86% of the world's merchant fleet gross tonnage. For further detail on this agreement see the chapter by Goodwin.

¹⁹⁸ As of May 2015 the EU ratifying states are Croatia, Denmark, France, Germany, the Netherlands, Spain and Sweden.

¹⁹⁹ The European Parliament's Committee on the Environment, Public Health and Food Safety in fact advocated that the Commission should report on Member State's implementation of the International Maritime Organisation's Guidelines for the Control and Management of Biofouling within three years of the Regulation entering into force and should 'if appropriate, submit legislative proposal to incorporate such measures into Union law'; *Report on the Proposal for a Regulation on the Prevention and Management of the Introduction and Spread of Invasive Alien Species* (European Parliament, 2014) [document A7-0088/2014], 18. This proposed amendment to the Regulation was not incorporated in the final text.

²⁰⁰ See, for example, Article 19(2)

²⁰¹ This is in line with another aspect of the ecosystem approach noted in CBD Decision V/6 (n 129). Principle 4 of the latter notes that there is 'usually a need to understand and manage the ecosystem in an economic context' and that an applicable ecosystem-management programme should '[i]nternalize costs and benefits in the given ecosystem to the extent feasible'. Such internalization would include imposing environmental costs on those who cause them.

²⁰² Article 21. Member States will determine the penalties for infringement of the Regulation; such penalties will be "effective, proportionate and dissuasive" (Articles 30(1) & (2)).

within three months of this notification to apply eradication measures.²⁰³ This can therefore be said to be in line with the application of an eradication programme in the early stages of an IAS invasion as noted in the CBD Guiding Principles. CBD guidance does however indicate that eradication should take place but only ‘where it is feasible’. This is also acknowledged in the Regulation in that Member States may decide that eradication is inappropriate when either they are technically infeasible, or when the costs will be exceptionally high.²⁰⁴ Similarly, eradication may be deemed to be inappropriate when suitable methods of eradication are unavailable, or would have a particularly adverse impact on human health, the environment or other species.²⁰⁵ When eradication is not appropriate, both the CBD guidance and the Regulation acknowledge that appropriate containment or population control measures should be introduced.²⁰⁶

7. Some Conclusions

The regime established by the Regulation is certainly an important step forward in the establishment of a more comprehensive and co-ordinated approach to the problems posed by IAS in the EU. It is positive, for example, that the Regulation will introduce measures which will potentially regulate far more IAS than had previously been the case under EU law, and that it requires priority to be given to preventing the introduction of such species rather than merely allowing Member States to react to invasions once they have already taken place. The ecosystem approach is also generally endorsed and will *inter alia* require restorative action to be taken to assist the recovery of a damaged ecosystem, albeit when the costs of restorative action are not prohibitive. Additionally, the establishment of a surveillance system must be welcomed bearing in mind that most Member States did not have early-warning measures in place to detect and respond to invasions prior to the Regulation.²⁰⁷

Whilst the Regulations’ provisions might have been more demanding with regard to the release of ballast water, important obligations nonetheless now apply to the intentional introduction of IAS and to priority pathways of unintentional introduction. It is also encouraging that the polluter-pays principle is to be applied, that efforts are expected from Member States to raise public awareness, and that a scientific forum will provide the Commission with advice in the listing process as well as in the application of emergency measures. Furthermore, the measure establishes the need for risk assessment utilising common criteria which is important when one bears in mind that research had concluded that ‘tools for assessing IAS risk are still relatively new and poorly developed’ in EU Member States, and that there had previously been no common method of performing risk assessment.²⁰⁸

There is therefore much to be applauded in the measure’s content and the Regulation clearly seeks to complement the work of international and regional treaty regimes by introducing an approach which will also benefit from the unique enforcement machinery of the EU. Taking the form of a ‘regulation’, the measure is both binding in its entirety and directly applicable in all Member States. Too often international legal regimes lack the ability to apply the appropriate level of political and legal pressure to bring about effective implementation and compliance. By contrast, should a Member State fail to live up to its obligations under the Regulation, the Commission can opt to take legal action before the European Court of Justice (‘ECJ’) to enforce its provisions under Article 258 TFEU. If the ECJ finds that there has indeed

²⁰³ Article 17(1)

²⁰⁴ Article 18(1)a and b

²⁰⁵ Article 18(1)c

²⁰⁶ Article 19(2)

²⁰⁷ European Commission (n 67), 214

²⁰⁸ *Id.*

been a violation of the measure and then rules subsequently that the Member State in question has failed to comply with that initial judgment, the ECJ may also impose a lump sum or penalty payment upon the Member State in question.²⁰⁹

Whilst the Regulation must therefore be regarded as a significant move in the right direction, some of its provisions can rightly be criticised. In relation to the need for further research on IAS the measure should have placed far more of an onus on Member States to carry out such work and is not in line with CBD guidance in this regard. Additionally, it will, for example, be recalled that Member States may derogate from the measure's restrictions 'in exceptional circumstances' thereby allowing permits to be given to establishments to carry out activities for reasons of 'compelling public interest, including those of a *social or economic nature*' (emphasis added).²¹⁰ This appreciably widens the potential for derogations and in vetting such permits the Commission will undoubtedly play a key role in determining the extent to which derogations are allowed for economic and/or social reasons. Might those involved in the pet trade successfully apply for such a derogating permit in relation to a species on the List if it would otherwise mean the collapse of a lucrative economic market? Might an argument submitted by a company in the horticultural industry with regard to a number of IAS of Union Concern similarly be treated as amounting to 'exceptional circumstances' if it would otherwise lead to the demise of a key employer? It is submitted that Member States in granting such permits, and the Commission in the vetting of the same, must give particular and adequate consideration to the fact that any such derogation is indeed granted *only* in exceptional circumstances and also with appropriate regard being given to the susceptibility of all protected habitats and species to a possible unintentional release of the IAS in question from any commercial establishment.²¹¹

Whilst the provisions of the Regulation can be said to be generally in line with the CBD's Guiding Principles in many respects, there are of course instances where the measure falls short in this regard. The most significant of these relates to the applicability of the precautionary principle. Whereas the Regulation can be said to endorse a precautionary approach in relation to the possible application of emergency measures, these measures cannot continue indefinitely. Bearing in mind the lack of express reference to the precautionary approach in the Regulation's provisions as they relate to the listing process as well as the applicable WTO's rules under the SPS Agreement, it is submitted that it is very unlikely that a precautionary approach will be taken in the initial listing process which must be completed by the end of 2015. If this submission is correct, IAS will therefore not be listed in a situation where there is insufficient scientific certainty as to the species' impact. This will also be the case in relation to decisions as to any future additions to the List regardless as to whether or not the species in question was subject to prior emergency measures. The lack of a precautionary approach in this regard would be unsatisfactory especially when one bears in mind that 'it is extremely difficult to predict accurately which introduced alien species will have benign effects and which may become invasive in a new habitat. Time factors make prediction even harder. While some alien species show their invasiveness quickly, others may have a long "lag" time.'²¹² The lack of a precautionary approach in the listing process would not be in line with CBD Guidance nor

²⁰⁹ Article 260(2) TFEU

²¹⁰ Article 9(1)

²¹¹ Article 9(4)g notes that an application for an authorisation must include 'an assessment of the risk of escape ... accompanied by a description of the risk mitigation measures to be put in place'. Furthermore the preamble stipulates that 'particular attention should be paid to avoiding any adverse impacts on protected species and habitats, in accordance with relevant Union law' (paragraph 19).

²¹² Shine, Williams and Gundling (n 1), 3

the Bern Convention's 'European Strategy on Invasive Alien Species', and would be far from a more satisfactory approach in which a non-native species is 'guilty until proven innocent'.

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